Lab Report 7

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Objective:

The purpose of this lab is to characterize NPN and PNP bipolar junction transistors (BJT), and to analyze and design DC biasing circuits to set the DC operating point of BJTs.

Introduction:

First we calculate the necessary resistance values for each of the circuits. Then we simulate them in multisim to make sure that they are correct, and then we build the circuits and measure the values there.

Calculations:

Simulation Plots

Figure 2a

Figure 2b

Figure 4a

Figure 4b

Experimental Plots

NPN Characterization (Ic vs Ibe)

NPN Characterization (Ic vs Ice)

PNP Characterization (Ic vs Veb)

PNP Characterization (Ic vs Iec)

Conclusion:

There were almost no differences between my simulated values and my calculated ones except for a small difference in all of them since I used less exact values in my simulation. As for my simulated vs experimental values, there were some differences in all of the values. However, they can all be attributed to the lack of exact resistance values available. I tried to use the closest values as I could but there were many in the circuits that were simply not the same as a calculated.